

CLAIMS

1. A method of producing an SOI wafer in which an SOI layer is formed on a buried oxide film by forming an oxide film on a surface of at least one of a bond wafer and a base wafer, bonding the bond wafer to the base wafer through the formed oxide film, and making the bond wafer into a thin film, wherein after the oxide film is formed so that a total thickness of the oxide film formed on the surface of at least one of the bond wafer and the base wafer is thicker than a thickness of the buried oxide film that the SOI wafer to be produced has, the bond wafer is bonded to the base wafer through the formed oxide film, the bond wafer is made into a thin film to form an SOI layer, and thereafter, an obtained bonded wafer is subjected to heat treatment to reduce a thickness of the buried oxide film.

2. The method of producing an SOI wafer according to Claim 1, wherein a thickness of the SOI layer formed by making the bond wafer into a thin film is 500 nm or less.

3. The method of producing an SOI wafer according to Claim 1 or Claim 2, wherein the heat treatment

to reduce the thickness of the buried oxide film is performed in an atmosphere of a hydrogen gas, an argon gas, or a mixed gas of those at a temperature of 1000 °C or more.

4. The method of producing an SOI wafer according to any one of Claims 1-3, wherein the thickness of the buried oxide film is reduced to 100 nm or less by the heat treatment to reduce the thickness of the buried oxide film.

5. The method of producing an SOI wafer according to any one of Claims 1-4, wherein before the bond wafer is bonded to the base wafer, hydrogen ions or rare gas ions are implanted into a surface layer portion of the bond wafer to form an ion-implanted layer, and after the ion-implanted surface of the bond wafer is bonded to the base wafer, the bond wafer is delaminated at the formed ion-implanted layer to make the bond wafer into a thin film.

6. The method of producing an SOI wafer according to any one of Claims 1-5, wherein after the heat treatment to reduce the thickness of the buried oxide film is performed, sacrificial oxidation treatment is further performed.

7. An SOI wafer produced by the method of producing an SOI wafer according to any one of Claims 1-6.